

ABSTRACT OF THE DISCLOSURE

A SiO_2 film is formed as a thermal oxide film on a surface of a Si substrate. Next, the SiO_2 film is heat-treated under a nitridation gas atmosphere to be changed to a SiON film. As a result, a tensile stress toward a SiON film side acts on atoms existing on a surface layer of the Si substrate to cause distortion, so that the interatomic distance of the Si atoms in the Si substrate becomes longer. An amount of the distortion can be measured by, for example, an X-ray CTR scattering method. Next, a SiN film is formed on the SiON film by a CVD method or the like. The magnitude of the tensile stress acting on the Si substrate differs depending on the thickness of the SiN film. This method improves carrier mobility owing to the displacement of the Si atoms, so that sufficient carrier mobility can be obtained even when nitrogen concentration near an interface between the SiON film and the Si substrate is high.